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ABSTRACT

It is obvious to any observer that today the social studies is in the process of a revolutionary change. It is axiomatic that one of the universal goals that all these changes are aimed at is to make social studies courses more meaningful and relevant to the life experiences of the student. One of the fastest developing innovations within the social studies revolution is a new teaching strategy generally referred to as simulation or gaming. Simulation organizes a great deal of fragmented knowledge and provides an effective teaching device as well because both time and space can be compressed so that years of simulated development can take place within a few hours. This outline represents an effort to begin the development of an analysis system that will effectively provide a method of analyzing autotelic educational material such as games and simulations. This system will be of use to curriculum supervisors, chairmen, and teachers who make curriculum decisions; to classroom teachers who use the materials; and to innovators that develop the materials. The dimensions of the analysis system are spelled out in the paper. Further work on the system will include explanations and examples of the items in the outline, highly selected bibliographical references to aid in understanding parts of the system, training and testing items to aid learning the system, elaborations on uses, and descriptions of success. Related documents are: SO 000 836, SO 000 991, and SO 000 992. (Author/SD)

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A SYSTEM FOR ANALYZING SOCIAL SIMULATIONS

AND

EDUCATIONAL GAMES (SAS)

or

GAMES ANALYSIS SYSTEM (GAS)

A working paper subject to revision.

(for limited circulation)

March 1969

Ronald Stadsklev, Professor
Concordia Teachers College Laboratory High School

Social Science Education Consortium, Inc.

SO 000 835

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1969

INTRODUCTION

Background and Significance:

It is obvious to any observer that today, after fifty years of rather static condition, the social studies is now in the process of a revolutionary change. A revolutionary change that is exploding in every direction. This present ferment is laying the groundwork for undreamed of changes in the social studies curriculum of tomorrow. It is axiomatic that one of the universal goals that all these changes are aimed at is to make social studies courses more meaningful and relevant to the life experiences of the student.

A modern-day definition of social studies clearly indicates this concern for relevancy. For example, Cecil Parker defines social studies as "that phase of the school curriculum concerned with the relations of human beings to one another and to their environment." Yesterday social studies meant the study of history and perhaps some geography. Today it is increasingly reflecting all branches of social science and developing a growing emphasis upon the behavioral aspect. According to Bruce Joyce, "the three primary sources of social studies are found in the needs of the student himself, the needs of the society in which he will be a citizen, and in the social sciences themselves." Therefore, curriculum developers are beginning to implement an integrated social studies design that is based more upon process than upon content and are seeking to identify concepts and generalizations that are common to all social science disciplines.

In addition, men like Kenneth Boulding and Alfred Kuhn, who are interested in the social systems of man, are making great efforts to devise descriptors that will apply to all social sciences because, as Oppenheimer states, we need "...to develop habits of mind which permit truths from one field to elucidate facts in another, which develop a dedication and search for order in novelty, variety, and contingencies." There is little doubt, in the mind of Ted Fenton, that a systems approach to the teaching of the social studies will soon be upon us. Perhaps at that time, social studies will become a discipline in itself.

Needless to say, imaginative new teaching strategies will be required to facilitate this type of social studies curriculum. It is no mere coincidence that one of the fastest developing innovations within the social studies revolution is a new teaching strategy generally referred to as simulation or gaming.

According to the Washington Center for Metropolitan Sutdies this new strategy seems to be a highly effective facilitator for carrying out the integrated type of program mentioned above, because it focuses on a comprehensive study of man's social problems. It helps us to avoid the "academic myopia" which accompanies the increased development of specialization in social science. When one is conducting a study of the urban center, the problems of decaying core, suburban sprawl, traffic congestion, and air and water pollution are not solvable or even understandable, wholly within the realm of any one of the individual disciplines of social science. However, simulation organizes a great deal of this fragmented knowledge and provides an extremely effective teaching device as well because both time and space can be compressed so that the students take part in years, or even decades, of simulated development within a few hours.

Simulation seeks to simulate certain aspects of life within the classroom and then allows the student to learn by experiencing the consequences of his actions within that simulated environment. Learning, therefore, comes not by "trying to learn," but as a by-product of coping with the environment. Dr. Coleman states that simulation provides the social studies with a laboratory situation similar to that which the physical sciences enjoy. Bruce Joyce discusses what kind of innovation promises to lead to better strategies of social studies curriculum and instruction in social studies, and makes the following observation:

> Currently there are several exciting experiments in instruction which can change educational strategies radically. One of these is teaching through simulation.

Cleo Cherryholmes, the assistant director of Project Social Studies at Northwestern University, in a recent article made the following comment about simulation:

> Simulation, a teaching technique sometimes called gaming, represents a dramatic exploration in teaching . . . the student not only studies as an observer but becomes personally involved.

According to Gary Shirts and Hall T. Sprague, of the Western Behavioral Science Institute, simulations are important for this reason:

> They are conventional enough in appearance in superficial effect to gain acceptance into the public school system, and yet they (a) excite students about learning; (b) help them learn how to learn (by provoking inquiry); (c) provide experiential tools for learning; (d) influence the classroom climate so that subsequent sessions allow for more relevant learning activities.

At an NSF workshop in Pueblo, Colorado this writer presented a paper entitled "Simulation: What is It? What can it Do?" In this paper were 36 observations made by simulations innovators and classroom teachers of various regions of the country, all supporting the use of simulation games.

Although simulation is certainly not a panacea for the shortcomings of education, it does seem to offer as much potential for the future of education as any other development on the educational horizon. By providing information in a meaningful context, simulation may have a tremendous potential for shaping and influencing the attitudes and convictions of the learner. Whether the simulations will lead to useful results or become a powerful way of generating false information and detrimental attitudes will depend upon the skill and competence with which it is used.

In the February, 1969 issue of Social Education, the title "Simulation: The Game E-X-P-L-O-S-I-O-N" is indicative of the fact that within the next few years we will be finding more and more simulation games appearing on the educational market. Because of the relative newness of the game approach, there has been a consequent lack of time to develop a systematic procedure for analyzing and comparing them.

This paper represents an effort to begin the development of an analysis system that will effectively provide a method of analyzing autotelic educational material such as games and simulations. This system will, hopefully, be of use to curriculum supervisors, chairmen, and teachers who make curriculum decisions; to classroom teachers who use the materials; and to innovators that develop the materials.

The dimensions of the analysis system are spelled out in this outline. Further work on the system will include explanations and examples of the items in the outline, highly selected bibliographical references to aid in understanding particular parts of the system, training and testing items to aid in learning the system, elaborations on possible uses of the system, and descriptions of ways in which the system has already been used successfully.

It would be impossible to acknowledge the source of all the ideas combined in this analysis system, but some of the most direct debts should be mentioned. Lindy Harry and Samuel Livingston of the Academic Games Project at Johns Hopkins University should receive credit for most of the ideas reflected in section 1.0, and many of those in section 2.0. Section 5.3 was adapted from the writings of Clark C. Abt. The well-known taxonomies of Bloom, Krathwohl and their colleqgues have been used generously, particularly in Sections 4.2, 4.3, and 4.4. A taxonomy of valued objects by G. Allport and P. E. Vernon has been adapted for use in section 3.3. The general format was taken from Morrissett and Stevens, "Curriculum Materials Analysis System." Needless to say, none of these scholars are responsible for the ways in which I have adapted their ideas.

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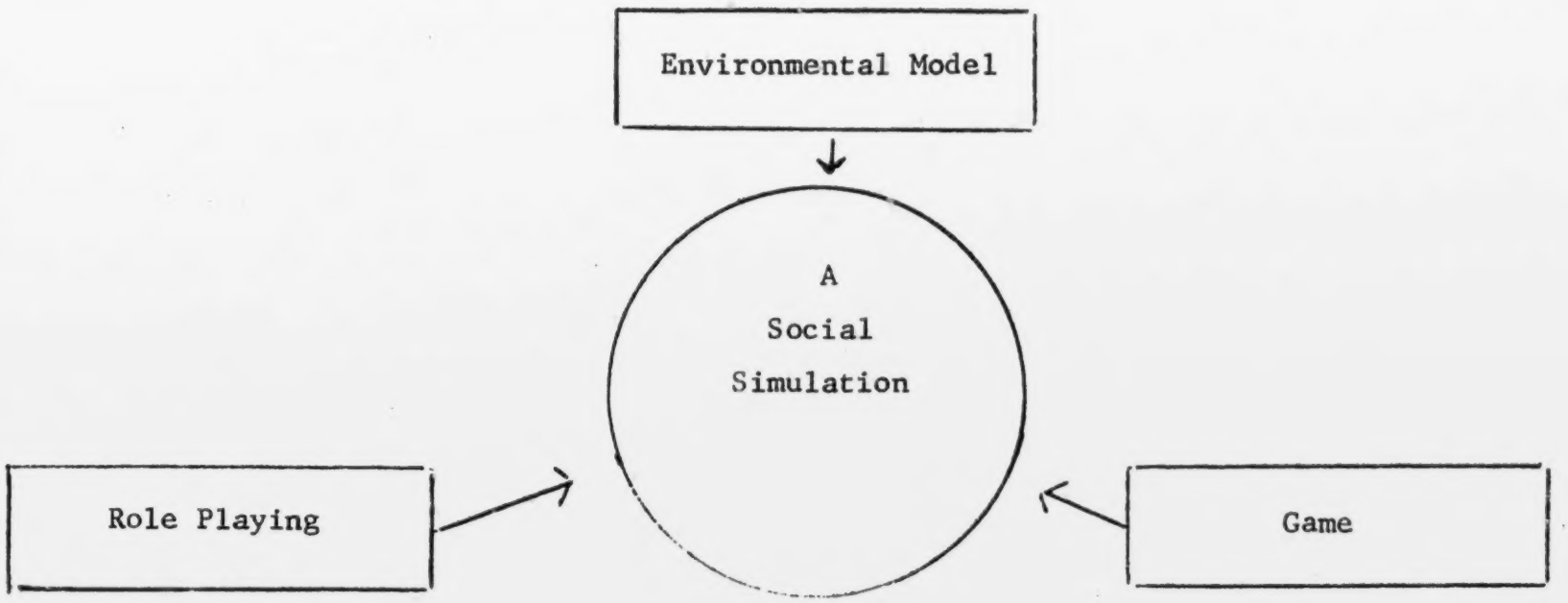
SIMULATION: WHAT IS IT?

(Version 1)



Definitions:

Game - Any contest (play) among adversaries (players) operating under constraints (rules) for an objective (winning).

Role-Playing - The practice or experience of "being someone else." It differs from games in that it has more determined outcomes and may not be competitive as are games.

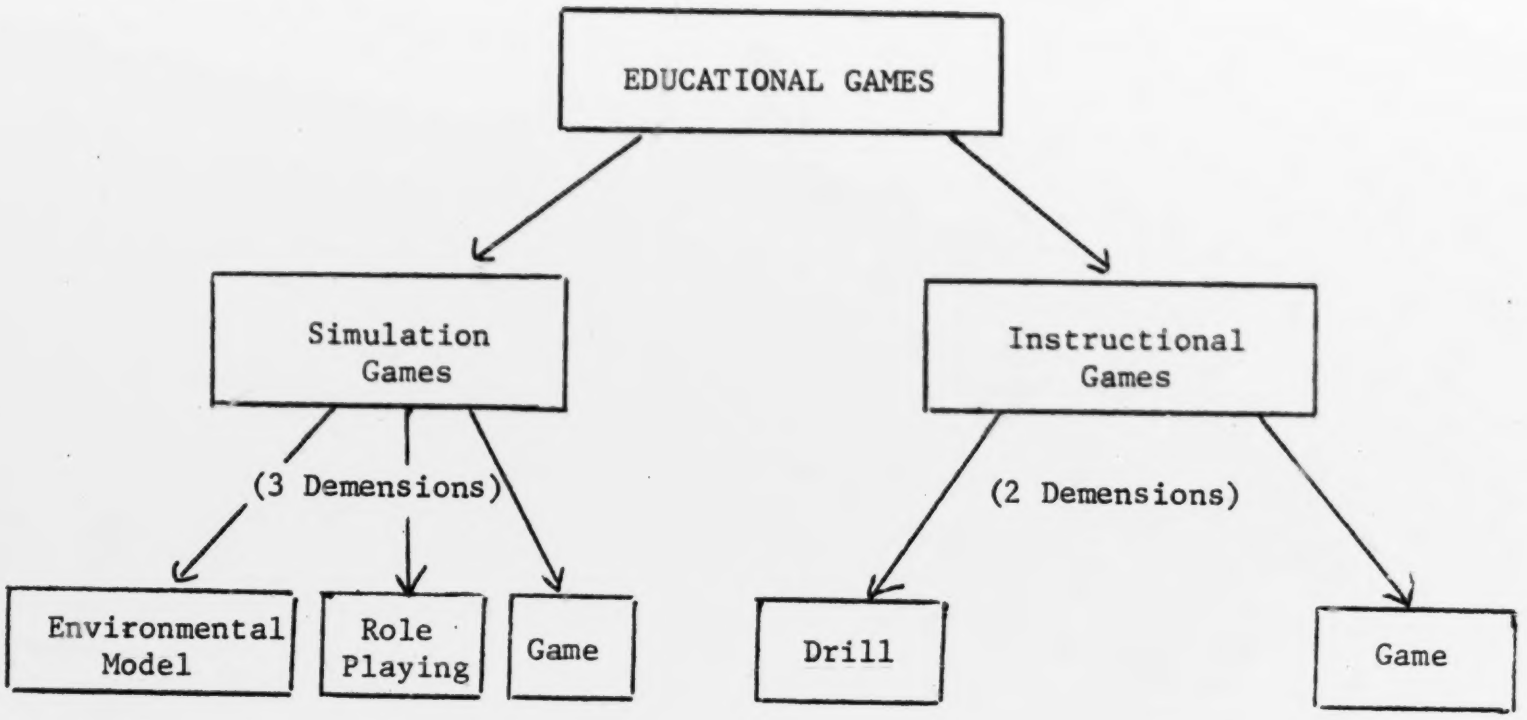
Environmental Model - Term utilized to designate a set of interrelated factors or variables which together comprise elements which are symbolic of a social system. (Social system refers to a portion of a total society - a set of interrelated parts or elements, each of which affects each of the others and is affected by each.) The variables utilized are limited to those which are necessary to ensure that the model will function - that the model will possess a degree of likeness to reality, or isomorphism.

Social Simulation - Involves the use of role-playing by the actors during the operation of a comparative complex symbolic model of an actual or of a hypothetical social process instilled into game form. Social simulations may be all-man, man-computer, or all-computer operations. It will give you a selective representation of reality, containing only those elements of reality that the designer deems relevant to his purpose.

Educational Game - Knowledge or information presented in a gaming process.

SIMULATION: WHAT IS IT?

(Version 2)



Definitions:

Educational Game: - Games which are useful in attaining educational goals.

Instructional Games: - Knowledge or information presented in a gaming process.

Simulation Games: - Involves the use of role-playing by the actors during the operation of a comparative complex symbolic model of an actual or of a hypothetical process instilled into game form. They may be all-man, man-computer, or all-computer operations. It will give you a selective representation of reality, containing only elements or reality that the designer deems relevant to his purpose.

Environmental model: - same as previous page.

Role playing: - same as previous page.

Game: - same as previous page.

Simulation: - an operating model of a physical or social process. A selective representation of reality.

Drill: - Process of teaching by making participants repeat an exercise again and again.

STEPS IN ANALYSIS

Analytical Pattern:

1.0	Basic Characteristics	(description)
2.0	Antecedent Conditions	(requirements)
3.0	Content	(what)
4.0	Rationale	(why)
5.0	Strategy	(how)
6.0	Evaluation	(judgment)

1.0 Basic Characteristics: (description)

1.1 Classification - is it a Social Simulation (Simulated Game) or an Educational Game (Instructional Game)? (refer to Introduction for the criteria to justify this decision.)

1.2 Printed Material

1.21 Student Manual

Suggested Considerations
- Are rules and directions clearly presented with examples?
- Are the roles clearly portrayed so that the player knows what is expected of him?
- Attractiveness and durability?

1.22 Teacher Manual

Suggested Considerations
- Does it explain: content (what they will deal with), rationale (why they will deal with it), strategy (how they will deal with it)?
- Does it describe antecedent conditions?
- Does it clearly explain the teacher's role?
- Does it present good techniques and discussion questions for debriefing sessions?
- Are rules and directions clearly presented with examples?
- Attractiveness and durability?

1.23 Evaluation Instruments

Suggested Considerations
- Knowledge (pre and post)
- Skill (pre and post)
- Attitude (pre and post)
- Norms

1.3 Physical Apparatus

Suggested Considerations
- Provide check list of apparatus.
- Amount of room apparatus occupies.
- Functional layout (board, charts, tabulation forms, etc.)
- Ease of distribution and collection (color-coded, fragile, pieces easy to lose, etc.)
- Storage
- Replacement - to what extent are items consumable?
- Attractiveness and durability.

1.4 Supplementary Materials

Suggested Considerations
- Maps
- Charts
- Pictures
- Bibliography - background or additional reading
- Additional student activities

1.5 Playability

Suggested Considerations
- Idle time for players
- Complex calculations that must be done during the simulation (or game).
- Rules that are likely to be violated - intentionally or unintentionally.
- Versions - begin with simple version and progress to complex version.

1.6 Money Cost

Suggested Considerations
- Cost per unit
- Cost per teaching station
- Cost of depreciation
- Cost of replacement (consumable materials).

1.7 Sources

Suggested Considerations
- Author
- Institution
- Publisher
- Editions

1.8 Availability

2.0 Antecedent Conditions (requirements)

2.1 Functional characteristics

Suggested Considerations
- Number of students required (minimum and maximum)
- Amount of time required
- Space requirements
- Furniture arrangements
- Library requirements

2.2 Cultural characteristics

Suggested Considerations
- Ethnic orientation
- Race attitude
- Social class
- Urban - rural setting
- Geographic area (Northeast, Midwest, etc.)

2.3 Student characteristics

Suggested Considerations
- Sex appropriateness
- Age level
- Reading ability
- Mathematical ability
- attitudes
- Cognitive ability
- Social ability
- Motoric ability
- Handicap aspect

2.4 Teacher characteristics

Suggested Considerations
- Attitudes:
  - willingness to put out extra effort in preparation
  - willingness to assume peripheral role in class
  - what constitutes valuable learning experience?
- Personality:
  - ability to be flexible
  - ability to tolerate noise and confusion
- Formal education
- Experience

2.5 Administration

Suggested Considerations
- Attitudes
- Organization

2.6 Community

Suggested Considerations

Attitudes (preserver or countervailing agent)
Conservative or Progressive

3.0 Content (What)

3.1 Author's Viewpoint

Suggested Considerations
- Knowledge
- Social Science disciplines
- Social Studies curriculum

3.2 Cognitive Content

3.21 Facts

Suggested Considerations
- Anthropology
- Economics
- Geography
- History
- International Affairs
- Political Science
- Psychology
- Sociology

3.22 Concepts

Suggested Considerations
- Anthropology
- Economics
- Geography
- History
- International Affairs
- Political Science
- Psychology
- Sociology

3.23 Generalizations

Suggested Considerations
- Anthropology
- Economics
- Geography
- History
- International Affairs
- Political Science
- Psychology
- Sociology

3.21 Anthropology

Suggested Considerations
- Facts
- Concepts
- Generalizations
- Structure
- Theory

3.22 Economics

Suggested Considerations
- Facts
- Concepts
- Generalizations
- Structure
- Theory

3.23 Geography

Suggested Considerations
- Facts
- Concepts
- Generalizations
- Structure
- Theory

3.24 Structure

Suggested Considerations
- Anthropology
- Economics
- Geography
- History
- International Affairs
- Political Science
- Psychology
- Sociology

3.25 Theory

Suggested Considerations
- Anthropology
- Economics
- Geography
- History
- International Affairs
- Political Science
- Psychology
- Sociology

3.24 History

Suggested Considerations
- Facts
- Concepts
- Generalizations
- Structure
- Theory

3.25 International Affairs

Suggested Considerations
- Facts
- Concepts
- Generalizations
- Structure
- Theory

3.26 Political Science

Suggested Considerations
- Facts
- Concepts
- Generalizations
- Structure
- Theory

3.27 Psychology

Suggested Considerations
- Facts
- Concepts
- Generalizations
- Structure
- Theory

3.28 Sociology

Suggested Considerations
- Facts
- Concepts
- Generalizations
- Structure
- Theory

3.3 Affective Content

Suggested Considerations
- Theoretical
- Ethnical, moral, and religious
- Asthetic
- Economic
- Political
- Social
- Psychological

3.4 Skill Processes

Suggested Considerations
- Critical and analytical thinking
- Communication
- Social adaptation
- Problem solving

3.5 Reality Factors (comparison of real situation with simulated game model.)

Suggested Considerations
- Extent reality simplified
  - Aspects of reality in simulation (or game).
  - Aspects of reality omitted from simulation (or game).
- Characteristics of simulation (or game) that are not a part of real situation.
- Role of participants correspond to real life.
- Actions and goals of players correspond to those of the participants in real life.
- Strategies available to the player match those available to the participant in real life.

4.0 Rationale and Objectives (Why)

4.1 Rationale - (A philosophic position based on certain basic assumptions and characterized by goals and objectives that can be supported by reasoned analysis.)

4.11 Author's Viewpoint

Suggested Considerations

Goals of education with respect to the individual.
- Assumptions about the nature of the individual.

Goals of education with respect to society.
- Assumptions about the nature of society.

How the simulation (or game) contributes to the goals for the individual and for society.

4.2 Cognitive Objectives

Suggested Considerations

Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

4.3 Affective Objectives

Suggested Considerations

Receiving
Responding
Valuing
Organization
Characterization

4.4 Psychomotor skill objectives

Suggested Considerations

Gross muscular use
Fine muscular use

4.5 Behavioral Objectives - (Specific objectives stated in behavioral terms with terminal criteria given.)

Suggested Considerations

Cognitive
Affective
Psychomotor

5.0 Learning Theory and Operational Strategy (How)

5.1 Learning theory - (Simulation is in itself a teaching strategy based upon certain learning theory principles. These principles should be apparent.)

Suggested Considerations

A motivated learner acquires what he learns more readily than one who is not motivated.
Learning under the control of reward is usually preferable to learning under the control of punishment.
Active participation by a learner is preferable to passive reception when learning.
Information about the nature of a good performance, knowledge of his own mistakes, and knowledge of successful results, aids learning.
Transfer to new tasks will be better if, in learning, the learner can discover relationships for himself, and if he has experience during learning of applying the principles within a variety of tasks.
Learning comes not by "trying to learn," but as a by product of coping with the environment.
We learn by experiencing the consequences of our own actions.

5.2 Author's theory of simulation (or game) design and development

5.3 Operational strategy

5.31 Relationship between the player and the subject matter.

Suggested Considerations

Reality - being true to life today.
Historical - based on or suggested by authentic events of the past.
Hypothetical - based on a logical possibility.
Fantasy - unreal, based purely on imagination.

5.32 Degree of control which the players collectively exercise the outcome of the simulation (or game).

Suggested Considerations

Amount of skill involved (situation outcome dependent upon player's capabilities.)
Amount of chance involved (situation outcome independent of player's capabilities.)

5.33 Nature of the interaction among the players.

Suggested Considerations

Amount of showdown (autonomous competition)
Amount of strategy (interacting competition)
Amount of competition (each player trying to outdo the others)
Amount of cooperation (players must work together to succeed)

5.34 Degree to which the set of actions which a player may take is constrained by the rule structure of the game.

Suggested Considerations

Open ended - completely free role-playing
Moderately structured - various channels available
Rigidly structured - will always come out the same

5.35 Termination of simulation (or game).

Suggested Considerations

Wipe out - must beat the other fellow to death
Time limit - who can do the best in certain time alloted
Goal setting - first one to reach certain goal

6.0 Overall Judgments

6.1 Sources of descriptive data (Evaluation).

Suggested Considerations
- Analysts
- Evaluators and researchers
- Standard Tests
- Classroom observations by teachers, observers
- Observations of out-of-class effects by teachers, administrators, parents, community

6.2 Effects reported or predicted by sources in 6.1.

Suggested Considerations
- On students
- On teachers
- On institutions
- On community

6.3 Comparisons

Suggested Considerations
- With author's intentions (internal)
- With other curricula (external)
- With standards of analyst (external)

6.4 Recommended uses

Suggested Considerations
- When to use
- Marginal use
- When not to use